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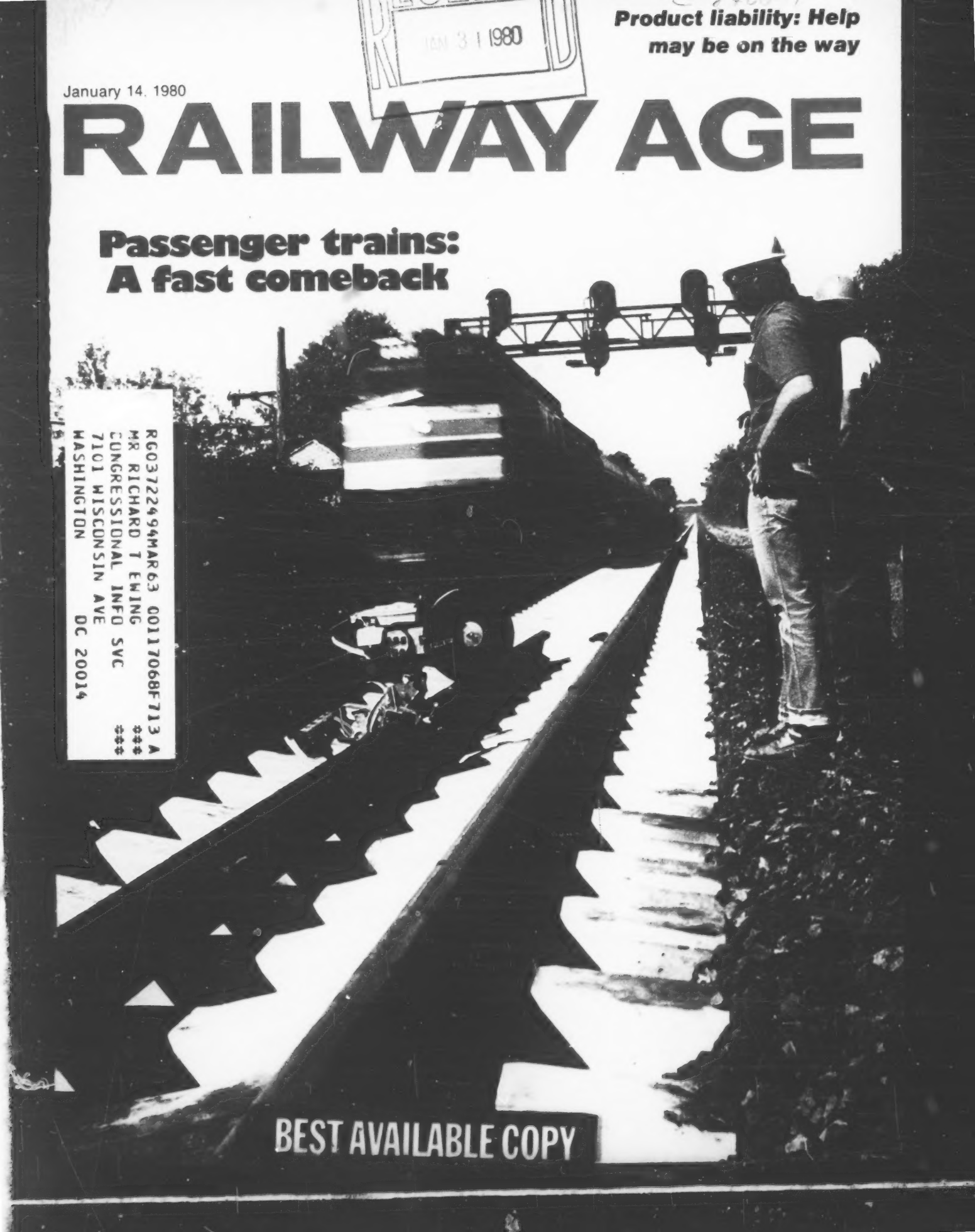
Product liability: Help may be on the way

January 14, 1980

RAILWAY AGE

Passenger trains: A fast comeback



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Inside

LUTHER S. MILLER

OUR BORN-AGAIN TRAINS

Like Will Rogers, a lot of people know only what they read in the papers. These people must have a pretty low opinion of the passenger train business. Here's a fair sampling of the newspaper headlines they've been reading recently: Amtrak Sues Southern Pacific; Pullman Named in a Second Suit on Subway Cars; Commuter Rail Service, Still Deteriorating after Fuel Squeeze, is Seen at Perilous Point; Philadelphia Subway Called Worst 'That Could Happen'; Auto-Train Defaults on Notes.

The stories that appeared beneath those headlines were, for the most part true—all too true. But there's a bigger truth that most of the papers, afflicted with the kind of tunnel vision that often passes for objective reporting, are missing. It is this: The passenger-train business today is the healthiest it has been in many years, and its prospects for further recovery are brighter than at almost any time since man learned to drive and fly.

The main reason for this, as our cover story (p. 16) makes clear, is not any great resurgence of public affection for trains; it is, rather, the recognition by policy makers that there's a better way to burn up our oil than on the highways.

How far the federal government has turned around on the subject of public transportation generally, and rail transportation specifically, becomes clear when you compare the beginning of the decade of the '80s with the beginning of the decade of the '70s. Ten years ago, when Congress was considering a $10-billion, 12-year program of aid to transit, some people reacted as if it were the beginning of the end for pay-as-you-go democracy. Today Congress is talking about a $50-billion federal investment in public transit over the next 10 years (with about 60% going to rail), and the news has stirred scarcely a ripple of protest among the guardians of our moral fiber.

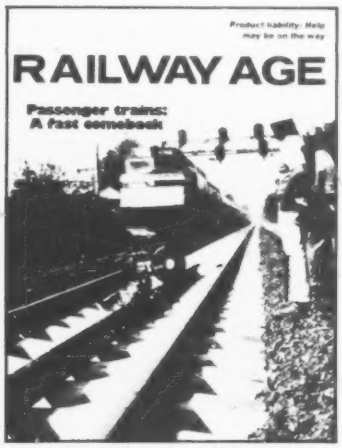
Ten years ago, there was only a trickle of aid to intercity passenger trains, though there was some talk of a takeover of the train business by a quasi-public agency to be called Railpax. Railpax became Amtrak, and it went into business on April Fool's Day, 1971—good timing, grumbled those who were calling a one-time $40-million capital grant fiscally foolish. Today the federal investment in Amtrak is close to $1 billion a year and rising—a buy that a couple of oil crises have made look like the bargain of the century.

We may not have a lot to thank the OPEC nations for—but passenger train partisans are forever in their debt.

"IT TOOK 30 YEARS TO GET IN THIS MESS..."

There are still those who believe the bus can do every job best, and that there's not much future for new rail transit. Bill Stokes is not one of them. Stokes, who will soon leave the American Public Transit Association to oversee the building of new transit systems in Saudi Arabia, gave *Railway Age* this five-year forecast: "I think you're going to see Los Angeles, Portland, and Detroit actually starting rail construction, and I'd guess that another half dozen cities will be in some advanced stage of planning. If one thing has come out of this whole energy mess, it's the growing recognition that electrically powered rail transit has to be an important element of our planning for the long-range future. It took us 30 years to get our cities in the mess they're in now, spread out all over the landscape. It will take less time, I hope, to undo some of the damage."

FEATURES



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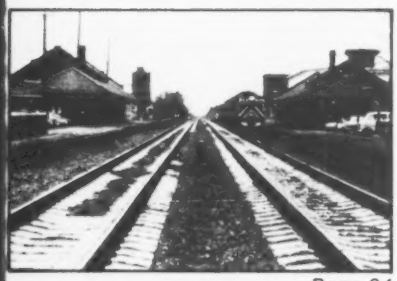

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COVER: Track cutters wait on the shoulder for an Amtrak train to pass. NECIP operations are scheduled to keep trains moving as normally as possible.

Big dollars make a big difference

By LUTHER S. MILLER, Editor

Superliner-equipped "Empire Builder" at Belton, Mont. "Amtrak's future looks about five times rosier than it did a year ago," says President Alan Boyd.

Years of neglect and malnutrition have left their marks on the railroad passenger business in North America. "We are suffering from a generation gap—a whole lost generation during which we did not train new managers or maintain our technical skills," mourned the operating chief of a big eastern rail transit system not long ago.

But an energy crisis can do a lot to close even a generation gap—and as a result of the great energy crisis of 1979, the comeback of the passenger train is gathering momentum at a pace faster than anyone thought possible just a year ago. The only really sour note today comes from the railcar manufacturers, who have seen a sizeable chunk of their business go overseas and are now fighting to get it back. Among operating people, there is solid optimism nearly everywhere you look.

"Amtrak's future today looks about five times rosier than it did a year ago," says President Alan S. Boyd.

"By any measurement," says Bill Stokes, president of the American Public Transit Association, "the outlook for rail and bus transit in 1980, as well as the entire decade of the '80s, is the brightest that it has ever been."

The roots of this optimism lie deep within the U.S. Treasury. To put it simply, Congress has decided that America must have an alternative to the gas-greedy automobile. That alternative is public transit—particularly fuel-efficient rail transit—and the federal pursestrings are being loosened to pay for it.

● **A $30-billion market.** By *Railway Age*'s estimate, around $30 billion in federal funds—and matching state and local funds—will be available for rail passenger capital improvements during the next 10 years. More billions will be available for operating subsidies.

The Urban Mass Transportation Administration figures it will have $50 billion to disburse during the decade in combined capital grants and operating subsidies. This is based on the expectation that up to $16 billion in windfall oil profits taxes will be added to UMTA's normal funding for the period. Of the $50 billion, about $30 billion will go for rail and bus capital grants, based on the patterns of the last 10 years (the remainder being earmarked for operating assistance). Of the $30 million available for capital, some $18 billion will go to rail transit and commuter agencies—again based on past patterns (and taking into account the likelihood that a slightly higher proportion will go to buses in coming years). To that, add state and local matching funds of around $5 billion. And to *that* add several billions of dollars that will be diverted to transit from cancelled urban highways, under the Interstate Transfer provision of the National Highway Act.

Meanwhile, Amtrak, which is separately funded, stands to get around $3 billion over the next 10 years for capital improvements—probably a conservative estimate, because capital funding is already approaching the $300-million-a-year mark.

There's similar activity in Canada, where the Province of Quebec has just voted to spend over $1 billion on rail passenger improvements in the Montreal area over the next five years.

A large part of this money will go for new equipment. *Railway Age*'s annual survey of the railroad passenger car market shows that the operating authorities as of Dec. 31, 1979, had 1,535 new cars on order, a backlog slightly higher than that of a year ago. They plan to order nearly 4,900 more new cars during the next five to 10 years, 1,000 more than they were projecting a year ago.

● **The riders return.** The new equipment will come on line none too soon. A survey of operating agencies across the U.S. and Canada presents this picture:

—For Amtrak, fiscal year 1979 was the busiest in history. Amtrak's trains carried 21.5 million passengers, a 14% increase over 1978. Because the average journey was longer, the increase in passenger-miles was even more impressive—22%. Because both ridership and fares increased, the ratio of revenues to expenses improved. In 1979, revenues covered 41.5% of expenses, vs 38.5% in '78.

—VIA Rail, Amtrak's Canadian counterpart, carried 6 million passengers in 1979, 300,000 more than in 1978; ridership during the company's three years of existence has risen by 34%. Says VIA Rail Chairman and President Frank Roberts: "The Iranian crisis, escalating oil costs, and gas shortages in the U.S. have combined to drive home the message that we in Canada are not immune to energy shortages. It is in this context that I see an extremely bright future for passenger trains in Canada. We shall simply no longer be able to ignore the fact that trains are the most energy-efficient means of public transportation available to us."

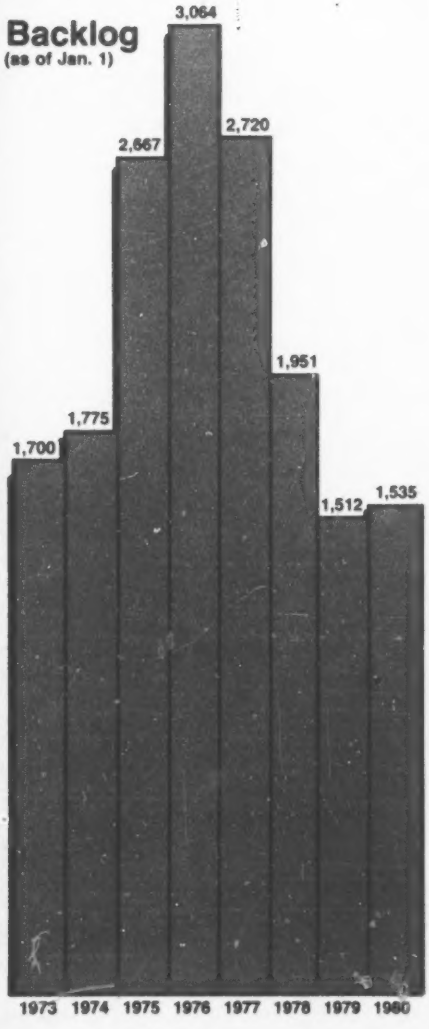
—Rail transit ridership has also reversed a long-time downward trend. During the first 10 months of 1979, reports APTA, heavy-rail rapid transit systems in the U.S. and Canada rolled up nearly two billion unlinked passenger trips, a 4.71% increase over the same period in 1978. Even New York City's trouble-plagued subway trains, whose ridership has declined drastically and regularly since World War II, have experienced a turnaround. On a recent average weekday, New York City Transit Authority trains carried 3,585,982 passengers, up 3.8% from a year earlier. Meantime, the new Washington Metro continues to give the lie to those skeptics who claim that conventional rail transit is a thing of the past. Metro's average daily ridership in fiscal 1979 was 227,572, compared with 147,556 in 1978. The popularity of the 31 miles of the system that are now in service has insured that the entire 101-mile system will be completed. Congress late in 1979 voted the $1.7 billion needed to finish the job.

● **New systems, new starts.** A number of new systems—some under construction, as in Baltimore, Dade County (Miami), Buffalo, Pittsburgh, and Calgary,

Passenger car market at a glance

Deliveries

Backlog
(as of Jan. 1)



These cars were delivered in 1979:

Purchaser	No. of cars	Type	Builder
Amtrak	55	Coaches	Pullman Standard
	4	Diners	Pullman Standard
	2	Sleepers	Pullman Standard
Atlanta (MARTA)	48	Rapid transit	Franco Belge
Chicago Transit Authority	10	Rapid transit	Boeing Vertol
Chicago RTA	15	Commuter	Budd
Edmonton Transit	3	Commuter	Siemens-Duwag
MBTA (Boston)	52	Commuter	Pullman Standard
	40	Commuter	Hawker-Siddeley
Montreal (MUCTC)	12	Rapid transit	Bombardier-MLW
New Jersey DOT	59	Commuter	General Electric
PATCO (Lindenwold)	12	Rapid transit	Canadian Vickers
San Francisco Muni	71	Light rail	Boeing Vertol
Toronto Transit Commission	48	Rapid transit	Hawker Siddeley
Total	**431**		

Work goes forward on this undelivered backlog:

Purchaser	No. of cars	Type	Builder
Amtrak	42	Coaches	Pullman Standard
	34	Diners	Pullman Standard
	67	Sleepers	Pullman Standard
	25	Lounges	Pullman Standard
	10	Intercity	Bombardier-MLW
Atlanta (MARTA)	72	Rapid transit	Franco-Belge
Baltimore Metro	72	Rapid transit	Budd
Calgary Transit	27	Light rail	Siemens-Duwag
Chicago Transit Authority	300	Rapid transit	Budd
Chicago RTA	55	Commuter	Budd
Cleveland (GCRTA)	48	Light rail	Breda
Dade County (Miami)	136	Rapid transit	Budd
MBTA (Boston)	150	Commuter	Hawker-Siddeley
PATCO (Lindenwold)	32	Rapid transit	Canadian Vickers
SEPTA (Philadelphia)	141	Light rail	Kawasaki
San Diego Transit	14	Light rail	Siemens-Duwag
San Francisco Muni	20	Light rail	Boeing Vertol
Toronto Transit Commission	146	Rapid transit	Hawker-Siddeley
VIA Rail Canada	50	Intercity	
Washington Metro	94	Rapid transit	Breda
Total	**1,535**		

These orders are likely to develop in 1980:

Purchaser	No. of cars	Type
Amtrak	200	Low-level intercity
Cleveland (GCRTA)	60	Rapid transit
Edmonton Transit	20	Light rail
New Jersey DOT	57	Commuter
New York MTA	70	LIRR m-u commuter
	60	Conrail m-u commuter
	15	Rail diesel cars
NFTA (Buffalo)	30-40	Light rail
SEPTA (Philadelphia)	125	Rapid transit
Washington Metro	50	Rapid transit
Total	**687-697**	

The 5-10 year outlook:

Purchaser	No. of cars	Type
Amtrak	200-300	Low-level intercity
	20-50	M-u
Atlanta (MARTA)	100	Rapid transit
Baltimore Metro	30	Rapid transit
Bay Area Rapid Transit	150	Rapid transit
Calgary Transit	40	Light rail
Chicago Transit Authority	500	Rapid transit
Chicago RTA	200-500	Commuter
Denver	192	Light rail
Edmonton Transit	56	Light rail
Honolulu Transit	200	Rapid Transit
Montreal (MUCTC)	12	Rapid transit
New Jersey DOT	45-57	Commuter
	20	Light rail
New York City Transit Authority	610	Rapid transit
New York MTA	394	LIRR commuter
	180	Conrail commuter
PAT (Pittsburgh)	55	Light rail
San Francisco Muni	20	Light rail
San Juan Transit	100	Rapid transit
SCRTD (Los Angeles)	120	Rapid transit
SEMTA (Detroit)	60	Double-deck commuter
	70-100	Light rail
SEPTA (Philadelphia)	120	Light rail
	30	Rapid transit
	100	Commuter
Toronto Transit Commission	100	Rapid transit
Toronto (GO Transit)	70	Double-deck commuter
VIA Rail Canada	200	Intercity
	100	Self-propelled
Washington Metro	300	Rapid transit
Total	**4,394-4,866**	

Old transit systems need more operating funds; Amtrak's biggest problem is a shortage of equipment

plus others still in the engineering or planning stages—are beginning to compete with the older systems for federal funds. Los Angeles, the biggest U.S. city now without rail transit, is ready to start $45-million worth of preliminary engineering for an 18.6-mile rapid transit "starter" line that will cost $1.2 billion. The Southeastern Michigan Transportation Authority a few weeks ago gave final approval to construction of an 11.3-mile light rail line for Detroit. Honolulu and San Juan are still in the preliminary planning stages, and a growing number of cities are taking a look at light rail, the latest entries on that list being Austin, Dallas, and Saskatoon.

● **Bad news, too.** To say that the rail passenger picture has never, in recent years, looked brighter than it looks today is not to say that there are not still many dark spots in that picture.

There will never, it seems, be enough money to plug up all of the leaks in some of the older rail systems. Boston's transit lines in recent weeks have been going through a severe fiscal crisis—so severe that the governor of Massachusetts had to "seize" the Massachusetts Bay Transportation Authority (on paper, anyway) in order to free enough money to keep the trains, trolleys, and buses running. As a result, Boston, which now has a 25-cent fare, could see the fare possibly doubled this year.

The size of the problem confronting the older systems was indicated by the new chairman of New York's Metropolitan Transportation Authority, Richard Ravitch. Said Ravitch: "The impact of inflation on our cost of fuel, power, parts, and labor has been enormous. To maintain the same level of service on the NYCTA operation in the next fiscal year will cost approximately $100 million more than in the present fiscal year. This does not include one cent for the impact of a wage settlement. Each 1% increment in the level of compensation has a budget impact of $10 million." Similarly, he said, to maintain the same level of service on MTA's commuter railroads would cost an additional $70 million through December 1980—plus $4.5 million for every 1% increase in labor costs.

● **Goldschmidt's "lowest priority."** Under the Carter Administration, the prospects for new rail transit start-ups is far from clear. Early in his Administration—on March 21, 1977—President Carter sent a memo to his Secretary of Transportation asking for a halt to "grossly overdesigned," costly fixed-rail systems, with particular reference to the Washington Metro, now estimated to cost more than $70 million a mile (vs the $22.5-million-a-mile cost of San Francisco's BART, which at the time was widely thought to be extravagant). The Carter people became more sympathetic to transit generally with the onset of the energy crisis—and to rail transit in particular when they needed to drum up public support for the windfall oil profits tax. But new DOT Secretary Neil Goldschmidt recently told an interviewer that he would probably give new rail systems "the lowest priority of all," because the fastest and cheapest way to attract riders to public transit was adding more buses. Nonetheless, half a dozen new rail start-ups are firmly in the works.

● **Amtrak's woes.** Amtrak's own problems are less related right now to money than to service levels and continuing equipment problems. In fiscal 1979, Amtrak's trains ran on schedule only 82% of the time, down from 91% a year earlier. The best performances were turned in by Richmond, Fredericksburg & Potomac (90.5%), Seaboard Coast Line (84.9%), and Union Pacific (82%); the worst by Delaware & Hudson (29.1%), Conrail (45%), and Illinois Central Gulf (47.8%).

One of the better on-time performance records, 79.4%, was posted by Southern Pacific—but it was SP that the U.S. Department of Justice sued late in December, charging that the railroad was violating federal law by giving its freight trains priority over an Amtrak passenger train.

Amtrak President Boyd told *Railway Age* later that he was not "after" SP or any other railroad but was simply trying to clarify Amtrak's relationship with the rest of the industry. "I tried to make it clear," said Boyd, "that we were taking a rifle shot approach at this one operation of one railroad, and that in fact the Southern Pacific does a pretty good job for us on the 'Coast Starlight.' We are certainly not shooting at the railroad industry. But we have got to be in a partnership with them; how we get there I don't know. Some of the railroads have taken the marriage vows with us, but others are bound and determined to be divorced. If nothing else, we've got to develop a common law marriage."

Amtrak's biggest single problem in the new year and for much of the new decade, says Boyd, will be insufficient equipment. "We're operating at close to capacity," he says. "One reason we didn't show an even bigger ridership gain last year was that we had no place to put the people. I'm talking, of course, about critical segments. Every day you're going to find seats on trains."

Amtrak is leasing all of the equipment it can find, including a batch of cars from the New Jersey DOT. Delivery of the Pullman Standard Superliners is now easing the equipment problems west of the Mississippi. This year Amtrak will order 200 of the low-level cars for eastern service, with several hundred more to follow.

● **Gloom among the builders.** The Amtrak orders are very likely to be placed with the only U.S. carbuilder still soliciting new business—the Budd Co. But there is distinct possibility that many of the other new orders will go offshore, despite efforts to get U.S. buyers to adhere to a strict "Buy American" policy. Budd, not surprisingly, has been spearheading these efforts—and it was Budd's charges that builders in Italy and Japan are "dumping" cars in the U.S. that has led to a preliminary investigation by the Department of Justice.

Two of the big carbuilders have said they will withdraw from the business as soon as present orders are filled—Pullman Standard and Boeing Vertol. Both have taken heavy losses on recent contracts. Boeing Vertol just weeks ago made a costly settlement with Boston's MBTA, agreeing, among other things, not to deliver the final 40 cars of a 175-car LRV order, at the same time paying MBTA $40 million and providing the authority, free of charge, kits for modifying the remaining cars. Pullman, having already taken a large loss on the R-46 order it delivered to New York, is now engaged in litigation with the City of New York over alleged faults in the cars.

Both Amtrak's Boyd and APTA's Stokes remain hopeful that there will be a revival of passenger car manufacturing in the U.S. Boyd last year called on bankers to help finance such a revival. And Stokes told *Railway Age* in a recent interview: "I think there's a distinct possibility that we're going to see a resurgence in the transit manufacturing industry in this country, in rail equipment as well as buses. The problem in the past has been the on-again, off-again federal policies, and the whims of individual system designers and specification writers. I think that with the clearer picture that is now emerging for the next 10 years, with the additional funding, and with the prospects for a doubling of transit ridership, there's a distinct possibility that some manufacturers are going to find it economic and worthwhile to get back into the business."

What does it all add up to? A rail transit lobbyist in Washington put his new year prediction in these words: "We're going into the new year and the new decade with our usual load of problems—but with an unusual load of money to throw at them." ■

NE Corridor improvement: '79 was

By JOHN ARMSTRONG
Associate Editor

To borrow Winston Churchill's characterization of the significance of the North African campaign in the winning of World War II, the 1979 construction season on the Northeast Corridor Improvement Program, while not representing the beginning of the end in the job of bringing reliable, high-speed passenger service to the Washington-Boston route, can definitely lay claim to being the end of the beginning.

What in springtime was a pious hope (*RA*, April 9, 1979, p. 24) has become an accomplished fact: Amtrak's Track Laying System (TLS) *did* put down 121 miles of concrete-tie/cwr track by the time its operation was closed down for the year on Dec. 12. No one is denying the importance of exceptionally benign autumn weather in allowing a full season of productive work, but as the work force winds down its efforts to winter level, the box score figures are there in many of the major categories of track work (see table).

Most clear-cut, perhaps, as an indicator of the credibility of NECIP plans for the rest of the task is the "cost efficiency" figure, which compares accomplishments with expenditures as the season advances. "We don't expect the figure to stay up there above 100% from here on out," says FRA Project Director Louis S. Thompson. "Winter working conditions on those types of work which can continue simply can't be expected to be that good, but we'll wind up the year very close to target.

"The learning curve has reached a level in line with our plans after those two painful seasons, and that can't help but give people a lot more confidence and pride in what we're trying to do. On the TLS, the Canadian National experience was that there was some further increase in productivity between the second and third years. We're not counting on that, because next year the TLS will be working on the south end in multiple-track, heavy-traffic territory under the catenary, where there is bound to be more interference and there are shorter segments between interlockings. Plans for the 1980 season will call for fewer miles of TLS work, but we know that we can count on making the schedule in planning other work around it."

With a total of over 160 miles of renewed track in place, whole segments of the corridor have taken on a new look. Both tracks from Readville, Mass., to Boston Switch (just north of Providence) are now cwr/concrete-tie mains, completing that aspect of the NECIP for the Massachusetts portion of the line (except for the section that MBTA is rebuilding into a four-track rapid transit, commuter rail, and Amtrak artery). Amtrak has been able to raise the speed limit over much of this territory to 90 mph (from the best-previous 79 mph), with often startling results in making up time on current schedules.

● **What doesn't show.** At the same time, much of 1979's accomplishments must be likened to underwater parts of the job of building an iceberg that will eventually tower above the surface—essential but unglamorous matters such as the work of Amtrak crews in clearing 1,323 manholes in preparation for installation of the new signaling system.

And what about those 614,000 wood ties that had been installed by Dec. 1, 1979 as a result of the three seasons of work? Much of the track work in this year's program has been in support of minimized service disruption in next year's TLS work—spotting in ties in the "outside" (primarily freight) tracks on the south corridor and bringing these lines up to Class 6 standards so they can take Metroliners at 100 mph while the "designated" (120-mph) tracks are being renewed.

"The difference between now and the start of the program is that we have a basically sound track structure over the entire south end of the corridor, which we definitely didn't before," says Amtrak Assistant Chief Engineer-Track Gene Ellis. "So far, we've had to concentrate on getting the new track material in place, and surfacing to Class 6 standards for high speed has suffered, although we have done somewhat better this past season. In 1980 we will be emphasizing the training and attention to details it takes to have really good track."

Thousands of passengers a day now ride over the 8.9 miles of concrete-tie track installed late in the 1978 season on the southbound main through Aberdeen, Md., where Conrail freight traffic is dense. "There have been no surprises," reports Ellis. "It has performed as expected; we surfaced it this season, as we expect to have to do on about a yearly cycle in heavy-tonnage territory."

Other answers to important NEC questions are being generated elsewhere. Since mid-December of last year, an accelerated preview of future maintenance needs is being generated by a million gross tons of traffic per night passing over a section of the FAST loop at Pueblo that duplicates the corridor's rail-tie-fastener-ballast system. Whether results turn out to be closer to predictions of the optimists or pessimists, there will be more advance notice to allow corridor plans and practices to respond.

Catenary of the design to be installed on the New Haven-Boston segment is already in place on a 14-mile loop at the Transportation Test Center. It has been tested "cold," and would already have been energized if a problem that showed up in testing of the transformer (which necessitated rewinding) had not been followed by a strike at the plant. Nevertheless, the transformer is now on site, electrification check-out with lower-speed equipment is starting, and the Pueblo loop is expected to be ready to test the second of Amtrak's AEM-7 electrics at full speed when it is delivered by General Motors in April or May. NECIP engineers will be looking with great interest at rail loads measured in the tests of this descendant of the lightweight Swedish RC-4 that was tested successfully in NEC service two years ago.

Farther down the road—but always in the thoughts and calculations of corridor managers who must expect frequent "why can't you go faster" queries at all levels—lie the possibilities of tilt-body operations over the curves of the north end. Amtrak is leasing the first two "production" LRC (Light, Rapid, Comfortable) train-sets being produced by MLW-Bombardier, which would have been under Amtrak-FRA test already had it not been for a strike at the locomotive plant from July to December, 1979. ("You get used to such things on a project of this complexity," philosophizes Lou Thompson.) The key knowledge to be gained from this program will be the feasibility of operating tilt-body trains (and their locomotives) over curved trackage at speeds comfortable for their passengers without generating unacceptable track forces.

● **Will it match the dollars?** Bit by bit, piece by piece, the items of knowledge, experience, planning, and assurance fall into place. But can the whole thing be made to fit within a budget that has a chance of flying?

In the case of NECIP, an off-the-top-of-the-head $1.75-billion project total has acquired some of the status of Holy Writ. The "redirection study" released in January 1979 recommended a stretch-out of about two years beyond the mandated 1981, recognizing that meeting the original date would require a level of effort virtually shutting down the railroad. Inflation, previous overoptimism, and a closer look at the tasks involved led to a recommended $654-million increase in the program to a total of $2.404 billion.

a good year

Then-DOT Secretary Brock Adams had Administration approval for the new program, and Senate committee hearings were held, but no implementing bill was actually submitted. With DOT's Amtrak amputation recommendations under consideration on the Hill, the numerous legislators throughout the land who were losing passenger trains could at best be expected to feel ambivalent toward voting more money for improved service up in one small, albeit populous, section.

The problem couldn't be ignored indefinitely, of course, and in late July a DOT letter to congressional leaders indicated that the Administration intended to stick by the $654-million figure. Chairman Cannon and his colleagues on the Senate Commerce, Science, and Transportation Committee fired back letters to DOT and Amtrak asking for independent answers to a number of pointed questions on NECIP status and plans, including references to "very large cost increases now surfacing."

While improving NECIP progress in the field and Amtrak's record ridership (augmented further by the gasoline crunch of early summer) were plus factors, and Congress did at the last minute resolve the question of the national passenger route structure, FRA and DOT had plenty of sticky matters to handle in responding:

—Actual inflation rates above those used in earlier estimates added $74.8 million.

—Continued refinements of the redirection study cost estimates (which actually dated mostly from the summer of 1978 and reflected little of the experience data from that work season) resulted in far more upward than downward adjustments, for a net increase of $164.8 million.

—Adjusting the cost-estimating process to make rational provisions for contingencies during program execution added $111.7 million.

—It was found that the redirection study figures inadvertently did not include Amtrak system engineering and project management costs in either the individual line items or in project cost totals, an omission of $106.7 million—not in the same league as last October's $3.8-billion error in money-supply reporting to the Federal Reserve's M-1 watchers, but still far too big a lump to hide under the carpet.

● **What fell out.** In order to keep the project within shouting range of the freshly reaffirmed redirection study total of $2.4 billion, several things simply had to give, including some big ones. The result of the agonizing adjustments was a package delivered (with the blessing of some friends from both houses of Congress) on an easy-to-remember anniversary—Dec. 7. It included:

—A DOT-sponsored bill, agreed by OMB to be "in accord with the Administration's program," amending the 4R Act of 1976 to increase the NECIP authorization to a total of $2.5 billion. Completion date for the FRA's role is changed from the original Feb. 5, 1981 to "five years from the enactment of this amendment" (presumably, early 1985) with any residual work to be Amtrak's responsibility. A goal of break-even operation of the Washington-Boston route within five years of completion is specifically established.

—A DOT-FRA letter reply (consistent with concurrent Amtrak responses) to the committee's specific questions, with appended line-item totals and comparative capsule descriptions of work to be accomplished under: 1) the original (and current) $1.75-billion program; 2) the redirection program of January 1979; and 3) the recommended $2.5-billion program.

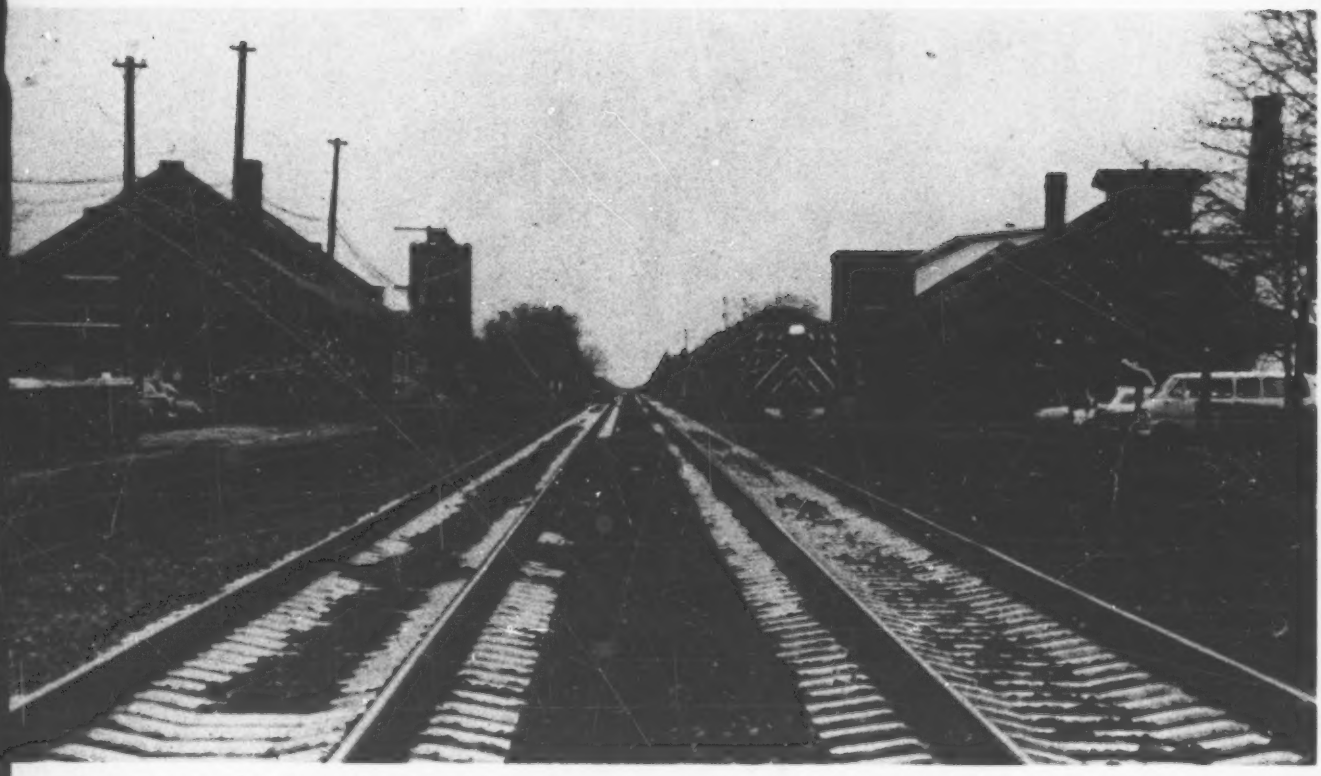
Biggest casualty in the re-restructuring (see chart on page 27) is the long-planned conversion of the Washington-New York

Plasser undercutter works behind the automated Track-Laying Machine.

NECIP's accomplishments to date

Work item	Unit of measure	Work season* 1977-78 (actual)	1978-79 (actual)	1979-80 (planned)	1979-80 (actual 12/1/79)
Cwr installation	Track miles	71.4	66.5	75	57
Cwr joint elimination	Welds	3,426	2,324	2,340	1,075
Insulated joint renewal	Joints	342	189	240	84
Wood tie renewal	Ties	215,886	231,056	200,000	167,206
Concrete tie installation	Track miles	—	41.4	121	108
Surfacing	Track miles	54.1	104.5	150	66
Shoulder ballast cleaning	Track miles	104.4	23.1	175	70
Undercutting	Track miles	39.1	53.6	40	21
Ditching	Track miles	—	33.3	154	11
Cost efficiency (percent of budgeted work accomplished divided by percent of budget expended)		**45.8%**	**72.8%**	**100%**	**107%**

* "Work season" extends April 1 - March 31.



The "new look" at Attleboro, Mass. Both main tracks are now cwr on concrete ties from Readville, Mass., to just north of Providence.

section of the NEC from its present 12-kV, 25-Hz to 25-kV, 60-Hz electrification. Leaving this conversion, considered essential if major increases in traffic are to be handled, to be accomplished by Amtrak on a "when required by demand" basis goes a long way toward meeting the fiscal constraints—but does it torpedo the whole corridor concept? Amtrak's rebuilt Metroliners and AEM-7-hauled Amfleet trains can make trip times equally well on either voltage and frequency if there aren't too many of them (and too many of Conrail's freights and everybody's commuter trains) drawing juice at any one time, assuming essential refurbishing of the aged catenary is carried out.

From a program standpoint, Lou Thompson sees at least three possible benefits from conversion deferral:

"First, we can go to school on the New Haven to Boston section and learn a lot more about 25 kV, 60 Hz before having to attack the conversion of what is, I believe, literally the most complex electrification in the world when you consider the multiplicity of users, the number of interlockings, and the four- and six-track sections.

"Secondly, the technology of solid-state voltage and frequency conversion is still moving ahead fairly fast, and it could well be that it will cost less to do some of these things in the late 1980s than it would now.

"A third advantage is that now, with enough time, we can get Amtrak and Conrail and UMTA and SEPTA and NJDOT together and take a longer-range look at the entire network south of New York, including what Conrail proposes to do between Harrisburg and Pittsburgh, and see what it is best to do on an overall basis, not just considering the needs of the corridor. We wanted to do this before, but there just wasn't time.

"Delaying the conversion will spread the effects on NJDOT and SEPTA equipment over a period of ten years or so, during which there will be normal overhaul cycles into which work can be fitted. It will also eliminate some arguable questions such as whether NJDOT's GG-1's could have possibly continued in service until the post-switchover era, making NECIP liable for financing their replacement."

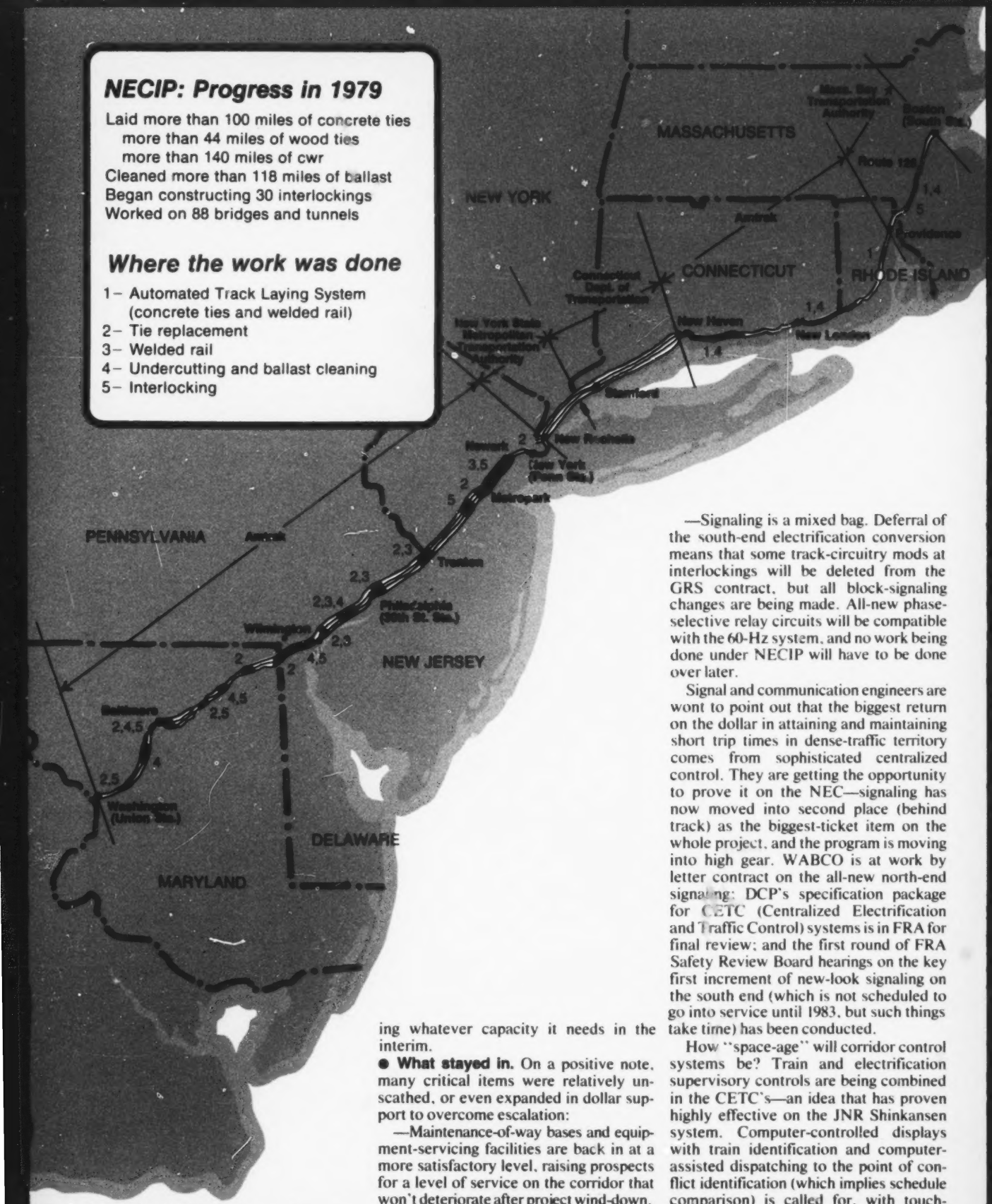
Another major deferral is in ballast shoulder cleaning and undercutting. It will remain at the level of the $1.75-billion program, rather than being increased (as in the redirection program) to eliminate virtually all deferred maintenance accrued during the pre-NECIP years. The result should be a line fully capable of speeds meeting trip-time goals at the completion of the program, though it would not be a completely renewed railroad which could get by with much less than the average amount of such cycle-maintenance work for the first few post-NECIP years. The rationale presented is that such maintenance is reasonably a responsibility of the owner-operator (Amtrak) and that it can well be adjusted at the time on the basis of traffic levels as they develop and included in Amtrak budgeting.

A generally similar philosophy has governed bridge, interlocking reconstruction or rehabilitation, crosstie, and rail programs. With minor changes, these return to the level of the $1.75-billion plan.

In the communications area, the story is surprisingly different. High leased-service costs for trunk traffic had suggested a saving in buying a microwave primary system as part of the redirection package. Currently exploding changes in technology—notably the potential of fiberoptic transmission for providing enormous message traffic capacity in a small cable with immunity to the worst electromagnetic environment the railroad can create along the right-of-way—have caused a quick change in strategy. Corridor message traffic density is low, but its use for ctc requires redundancy for reliability. An FRA study comparing coaxial cable, microwave, and fiberoptic options showed a clear advantage for the light beam, but also made it evident that Amtrak's right-of-way has suddenly acquired the potential for big and profitable piggybacking of common-carrier message traffic over any system meeting railroad needs. Since this commercialization was not germane to

NECIP programs compared

PROGRAM ELEMENT	CURRENT $1.75-BILLION PROGRAM	"REDIRECTION" (Jan. '79) $2.4-BILLION PROGRAM	RECOMMENDED (Dec. '79) $2.5-BILLION PROGRAM
Route realignments	**$41.9 million**	**$84.6 million**	**$63.2 million**
Spiral adjustments	None	34 curves	28 curves
Time-saving curves	5 curves*	6 curves	5 curves*
Bridge, interlocking or terminal approaches	5 curves*	16 curves	8 curves*
		* S-curves transferred to interlocking recognition	
Track structures	**$723.1 million**	**$722 million**	**$804.8 million**
Interlocking reconstructions	55	50	56
Interlocking rehabilitations	49	60	49
Concrete ties	420.9 miles	431.3 miles	420.9 miles
Wood ties	709,053	700,000	709,053
Relay rail	84 miles	95.2 miles	84 miles
New rail	201.7 miles	186.9 miles	201.7 miles
Undercutting	659.9 miles	773.6 miles	659.9 miles
Ballast cleaning	234.9 miles	519 miles	234.9 miles
Tunnel track rehabilitation	East River (2 tracks), North River, B&P (Baltimore)	East River (2 tracks), North River, B&P (Baltimore)	East River (2 tracks), North River, B&P (Baltimore)
Track (service facilities)	No m/w bases 2 service facilities	9 m/w bases 6 service facilities	5 m/w bases 6 service facilities
Bridges	**$271.4 million**	**$239.6 million**	**$271.5 million**
Replacements	17	29	17
Rehabilitations Amtrak)	184	155	184
Rehabilitations (FRA)	48	71	48
Electrification	**$113.8 million**	**$349.9 million**	**$307.4 million**
Washington-New Rochelle	Rehabilitate existing power supply system	Rehabilitate existing catenary system; convert power supply to 25 kV, 60 Hz	Rehabilitate existing power supply system
New Haven-Boston	No electrification	New 25-kV, 60-Hz catenary and power supply system	New 25-kV, 60-Hz catenary and power supply system
Signaling	**$182.1 million**	**$259.7 million**	**$323.1 million**
Washington-New Rochelle (multi-aspect, Wilmington-New York)	New system compatible with existing 12-kV, 25-Hz electrification	New system compatible with converted 25-kV, 60-Hz electrification	New system compatible with existing 12-kV, 25-Hz electrification
New Haven-Boston	Rehabilitate existing system	New system compatible with new electrification	New system compatible with new electrification
Communications	**$8.8 million**	**$33.6 million**	**$10.5 million**
M/w and operations radio base stations, mobile and portable radios	Procure and install	Procure and install	Procure and install
Communications transmission:			
Primary/secondary system	Lease	Procure and install	Lease
Tertiary system	Procure and install	Procure and install	Procure and install
Fencing	**$13.3 million**	**$46.6 million**	**$38.6 million**
Right-of-way	Mass., Del., Bronx Co. only	170.8 miles, plus service facility fencing	185 miles
Other	38 overhead bridges	125 overhead bridges, 4 access structures	201 overhead bridges
Grade crossings	**$16 million**	**$16 million**	**$16 million**
		(Post-FY 80 work not NECIP-funded)	
Stations: Operational/safety	**$21.7 million** Reduced-scope improvements to 7 stations	**$106.4 million** Improvements to 15 stations	**$119.4 million** Improvements to 15 stations
Stations: Nonoperational	**$23.7 million** Parking facilities only, at 4 stations	**$60.4 million** Improvements to 13 stations	**$72.1 million** Improvements to 15 stations
Service facilities	**$65.1 million**	**$159.9 million**	**$158.9 million**
Maintenance-of-way bases	No bases	9 bases	5 bases
Equipment facilities	4 facilities (reduced scope)	6 facilities	7 facilities
Tunnels - Civil work	**$19.6 million** B&P (Baltimore), North and East River tunnels (minor work only)	**$29.7 million** B&P, Union (Baltimore), North and East River, East Haven tunnels	**$33.2 million** B&P, Union (Baltimore), North and East River, East Haven tunnels (Minor scope reductions)
De Leuw, Cather/Parsons program management, systems engineering	**$202 million**	**$235 million**	**$226.7 million**
FRA program management, systems engineering	**$47.5 million**	**$60.6 million**	**$54.6 million**



NECIP objectives, the purchase of a primary communication system has been delegated to Amtrak, so it can exploit its suddenly attractive real estate while leasing whatever capacity it needs in the interim.

● **What stayed in.** On a positive note, many critical items were relatively unscathed, or even expanded in dollar support to overcome escalation:

—Maintenance-of-way bases and equipment-servicing facilities are back in at a more satisfactory level, raising prospects for a level of service on the corridor that won't deteriorate after project wind-down.

—Curve and spiral realignments for a more comfortable ride are back in—not on all the curves desired, but at least on the 28 judged most important.

—Signaling is a mixed bag. Deferral of the south-end electrification conversion means that some track-circuitry mods at interlockings will be deleted from the GRS contract, but all block-signaling changes are being made. All-new phase-selective relay circuits will be compatible with the 60-Hz system, and no work being done under NECIP will have to be done over later.

Signal and communication engineers are wont to point out that the biggest return on the dollar in attaining and maintaining short trip times in dense-traffic territory comes from sophisticated centralized control. They are getting the opportunity to prove it on the NEC—signaling has now moved into second place (behind track) as the biggest-ticket item on the whole project, and the program is moving into high gear. WABCO is at work by letter contract on the all-new north-end signaling; DCP's specification package for CETC (Centralized Electrification and Traffic Control) systems is in FRA for final review; and the first round of FRA Safety Review Board hearings on the key first increment of new-look signaling on the south end (which is not scheduled to go into service until 1983, but such things take time) has been conducted.

How "space-age" will corridor control systems be? Train and electrification supervisory controls are being combined in the CETC's—an idea that has proven highly effective on the JNR Shinkansen system. Computer-controlled displays with train identification and computer-assisted dispatching to the point of conflict identification (which implies schedule comparison) is called for, with touch-select control. Computerized conflict analysis and resolution, however, is to be a separately priced option in what is expected to be a highly competitive procure-

ment. Centralized control will cover only the Washington-Wilmington and New Haven-Boston segments of the corridor, however. From the beginning, it has been apparent that the cost of converting all the interlockings in the central corridor for compatibility with remote supervisory control is beyond even NECIP's pocketbook.

Down the track, all traffic will be under automatic (including overspeed) train control. Home and distant wayside signals will be retained at all interlockings to avoid complete disruption of operations in the event of disabled ATC equipment on a train; with the frequency of junctions and crossovers on the corridor, this means that only about 20% of the wayside signals will disappear.

The New Haven-Boston electrification, with its implications in meeting north-end trip-time goals, is of course the single most significant reinstatement in the re-redirection program.

"The real intent of the project has not only survived—it is been reaffirmed," says Thompson in stepping back for an overview of the outcome of several traumatic months. "There is no overriding *federal* interest—in the sense of learning how and where we can establish effective, valuable, rail corridor operations—in whether that final 200 miles of undercutting gets done as part of NECIP or under Amtrak's normal maintenance operations. In terms of Amtrak's increasing capability, I think such shifts make sense, so long as we in FRA work together with them to see that they get the money. There is no need to set some arbitrary boundary around the scope of NECIP: it *is* crucial that we do state the point at which, and the areas in which, NECIP is going to get out of the business and leave it to its owners."

● **Death of a monster.** Another milestone of significance was a memorandum of understanding signed on March 6, 1979, which officially established working relationships among the organizations (FRA, its "Program Manager" DeLeuw, Cather/Parsons, and Amtrak) which had started out as components of what was well characterized as a "hydra-headed monster." The memorandum confirmed the vastly improved conditions that had been developing since the start of the redirection study about a year earlier. Also streamlined were such matters as the assignment of work packages to Amtrak, now handled as technical directions rather than as formal contract modifications. Amtrak is both allowed and required to stay within an agreed-upon budget by compensating for overruns in one area by reductions in others.

The organizations involved have undergone considerable internal realignments as well, but the most positive effects have undoubtedly come from a get-the-job-done spirit of cooperation that has pretty well erased the lines of distinction between individuals working for the principals. "There will always be quibbling about details in a project of this size and complexity, and I can guarantee that there will continue to be examples of balls being dropped and things falling into cracks (though I can also promise that the program management-systems engineering line item will *never* again be left out!)," says Lou Thompson. "With the spirit of cooperation we have now, the answer to a problem is to make a few phone calls and get things straightened out. I think the productivity of the 1979 work season confirms that things are really happening."

● **Keeping the patient alive.** "Most of the discrepancies between those early construction cost estimates and the ones we make now by establishing in detail everything that has to be done (and when it can be fitted into the schedule) come from doing the job under traffic," says Thompson. "The fact that the patient has to be kept alive during the operation has a profound effect on the complexity of the surgery, as we now fully appreciate."

How did the corridor survive 1979? As anticipated, on-time performance hit new lows during the height of the work season. Despite lengthened schedules and the annulment of four midday Metroliners, almost half of August's trains failed to meet the modest ICC criteria for on-time terminal arrival. As some of the track improvements began to make their effects known, the situation looked up with the coming of autumn, even though the open weather allowed track work to continue at a high level. Metroliner schedules were reinstated in the Oct. 28 timetable, and some slight schedule improvements were made.

Meanwhile, ridership on corridor routes, though not increasing at the rate of that on some other parts of the Amtrak system, did respond to ever-more-expensive (and occasionally scarce) gasoline. For the 1979 fiscal year ending Sept. 30, corridor passengers passed the 11-million mark which, in the projections used for the redirection study, was not expected until 1980.

There were major delays at times; a doubly difficult problem in keeping train delays within reason is accomplishing the renewal of trackwork in interlockings. As Amtrak's engineer for interlockings, Jim Quirk, points out, "Two segments of main line are tied up for the duration, whereas in track renewals it is possible to confine diversions to a single section between crossovers during most of the process." The 1979 interlocking renewal program was hampered by late arrival of the Geismar Panel Renewal System, which was not fully operational until late summer. Performance of the versatile, $860,000 PRS, which can set an entire No. 20 crossover in place in three prepaneled bites, has been excellent. A less elaborate SRS (Swedish Rail System) device is currently busy laying new track panels in the North (Hudson) River tunnels. Between midnight on Fridays and 6 a.m. Mondays, about 18 panels are installed by taking one track out of service. When the track renewal process (which includes cwr) in the bores is completed in about a year, the resulting return to 60 mph from the 30 mph of recent times will be one of the most obvious fruits of the NECIP as it speeds the rides of a maximum number of Amtrak and commuter passengers.

● **What about *this* year?** The 1980 program will find the TLS working on the south end, starting virtually in the shadow of the Capitol dome as it works its way northward. The outside-track-upgrading program of 1979 will help much of the time, and the undercutting situation will be far more favorable than in the two previous seasons; enough ballast work has been accomplished in advance to let the TLS do its thing in already prepared roadbed. On the north end, with its badly deteriorated roadbed, so many ties fell off the rail when it was lifted that the only practical sequence put the undercutter behind the TLS. On the south corridor, track conditions are now good enough to allow the tie renewal, undercutting, and surfacing systems to follow in close-order formation and confine their disruption to a single track segment most of the time.

On the other hand, traffic is many times heavier, public visibility will be at a maximum, and Amtrak people will undoubtedly "just have to take our lumps" early in the season when working on the bottleneck double-track sections south of Landover and between Bush River and Gunpowder.

To make the best of changing conditions, Amtrak plans to adjust corridor schedules quarterly rather than twice a year for the duration. On the north end, consideration is being given to a further increase in operating speeds on the new track; while they "won't be able to play it like a fiddle until they get the electrification and the new signals," the corridor builders are encouraging the operators to take full advantage of what has been done to improve the service now.

● **No dearth of challenges.** The harsh winter of 1978-79 left the corridor with more than 160 miles of slow orders following FRA inspections in the spring. Its growing capacity for overcoming adversity was demonstrated as Amtrak had removed 113 miles of them (including most of those on the high-speed tracks) by season's end. DCP engineers on the job

peaked at 913 early in 1978, were down to about 700 by last October; Bechtel's augmentation of FRA manpower has dropped from 60 in mid-'78 to 30. Major track realignments ("where you build a new track on its own roadbed, connect up the end when it's ready") and interlocking reconfigurations that will actually let trains make better time will, for the first time, be part of the '80 season. The show is definitely on the road.

The first AEM-7 is scheduled to roll out Jan. 18 and be on the property a week or so later, to begin what should be a relatively short teething process before it starts running up and down the corridor and showing what it can do. FRA and Amtrak have had a number of independent consultants look at its design and construction, with the concensus that it should do what it is supposed to do and is the right vehicle for the job. "That's what they said about the TFX before it flew," remarks Lou Thompson. "We feel that this is one of the lowest-risk items on the project, but there's a lot riding on it, and as an engineer I'll feel a lot better about it after we've done it."

Yes, there are a lot of remaining items of far higher risk. If Congress has not taken action on the new authorization bill by late spring there will be slippages in some procurements. The four-track main line between New Rochelle and New Haven is not owned by Amtrak, which will remain dependent upon the state authorities for maintaining the track structure at its Class 5 level (and removing some current slow orders) if the contemplated corridor schedules are to be attained. Then there's that B&P tunnel bottleneck, which DOT proposes to alleviate by what may be the only fiscally feasible approach. Three sample sections will be refurbished this year to see if a slab floor and other minimal improvements will alleviate its clearance problems to some extent and raise the speed limits a bit while Conrail explores the matter of detouring some or most of its freights to competitor Chessie's route through the city.

Yes, the route ahead is far from straight, but those on the job should find it increasingly reassuring to be able to take an occasional backward glance and find the starting point for it all now actually receding in distance and not just in time. ■

Market

CARLOADINGS

Loadings of revenue freight in the week ended Dec. 15, 1979 totaled 467,551 cars, according to the Association of American Railroads. This was an increase of 5,816 cars, or 1.3%, compared with the corresponding week of 1978. Ton-miles generated by carloadings in the week ended Dec. 15 are estimated at 17.8 billion, an increase of 3.4% above the corresponding week of 1978.

REVENUE FREIGHT CARLOADINGS

Commodity	Dec 15 week
Grain	32,038
Farm products	5,052
Metallic ores	32,193
Coal	113,281
Crushed stone, gravel & sand	14,809
Nonmetallic minerals	14,348
Grain mill products	18,242
Food and kindred products	18,857
Primary forest products	21,446
Lumber & wood products (except furniture)	10,207
Pulp, paper & allied products	21,459
Chemicals & allied products	28,252
Petroleum products	6,621
Stone, clay & glass products	16,626
Coke	5,352
Metals & products	16,537
Motor vehicles & equipment	20,663
Waste & scrap materials	13,548
Forwarder & shipping assn. traffic	12,685
All other carloads	45,089
LCL traffic	246
Total cars loaded	**467,551**

	1979	1978
Cumulative total 50 weeks	**23,114,904**	**22,557,151**
Estimated revenue ton-miles (billions) 50 weeks	**872.8**	**827.1**

PIGGYBACK LOADINGS

U.S. piggyback loadings for the week ended Dec. 8, 1979 totaled 37,025 cars (1.2% below the corresponding 1978 week) and 64,948 trailers or containers (up 0.5% from 1978). Cumulative volume for the first 49 weeks of 1979 is 1,761,892 (up 1.4% from 1978) and 3,108,638 trailers or containers (up 3.5% from 1978).

● *CN Rail.*—Capital expenditures planned for 1980 total $430 million (up from $322 million in 1979), including $121 million for equipment (up from $57 million). In 1980, CN Rail will acquire 40 diesel-electric units and 831 new freight cars, compared with 10 locomotives and 370 freight cars last year. Maintenance expenditures will also show increases, from $465 million to $540 million for equipment and from $281 million to $312 million for fixed plant. CN recently ordered 1,000 100-ton covered hopper cars from Marine Industries at a cost of approximately $55 million. Delivery is scheduled for 1981.

● *Conrail.*—Announced the signing of major contracts with two minority-owned businesses. A contract with GCL Corp. of Great Neck, N.Y., an Hispanic-American firm, calls for the purchase of 400,000 wooden ties each year for a five-year period, at a total estimated cost of $32 million. GCL will construct a tie-treating plant at Bethlehem, N.Y., to begin supplying Conrail's ties in the fall of 1980. A contract with Metcalfe Spike Works of Metcalfe, Miss., a subsidiary of Delta Enterprises, Inc., calls for purchase of 1,000 tons of spikes at a cost of about $600,000.

● *Freight cars and locomotives.*—The following report has been received from the AAR and ARCI:

DELIVERED

	November 1979	November 1978	October 1979	Eleven Months 1979	Eleven Months 1978
Built new by carbuilders	7,971	6,461	7,758	75,976	56,316
Built new in RR shops	913	272	349	5,382	4,140
Built new - total	8,884	6,733	8,107	81,358	60,456
Rebuilt	54	23	96	1,666	1,321
TOTAL DELIVERED	**8,938**	**6,756**	**8,203**	**83,024**	**61,777**
Locomotives (new and rebuilt)	168	172	183	1,732	1,196

ORDERED

To be built new by carbuilders	7,890	8,302	6,129	101,351	112,577
To be built new in RR shops	768	500	0	5,231	3,434
To be built new - total	8,658	8,802	6,129	106,582	116,011
To be rebuilt	54	16	95	949	138
TOTAL ORDERED	**8,712**	**8,818**	**6,224**	**107,531**	**116,149**

ON ORDER AND UNDELIVERED

	December 1 1979	December 1 1978	November 1979	Average backlog 1979	Average backlog 1978
To be built new by carbuilders	113,797	86,059	117,422	113,750	60,705
To be built new in RR shops	6,160	5,714	6,305	6,341	5,431
To be built new - total	119,957	91,773	123,727	120,091	66,136
To be rebuilt	170	93	170	121	467
TOTAL ON ORDER	**120,127**	**91,866**	**123,897**	**120,212**	**66,603**
Locomotives (new and rebuilt)	656	836	774	969	754